

PORTLAND HARBOR
(MILL COVE)
MAINE

SURVEY

(REVIEW OF REPORTS)



U.S. ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS
WALTHAM, MASS.

MARCH 26, 1959

SURVEY

REVIEW OF REPORTS

PORTLAND HARBOR (MILL COVE) SOUTH PORTLAND

MAINE

SYLLABUS

The Division Engineer finds that provision of the locally desired anchorage for small boats, or a smaller 10-acre anchorage, 6 feet deep in Mill Cove is not economically justified for the existing and prospective recreational and fishing fleets in the vicinity. The indicated requirements of local cooperation for such an improvement include acquisition of the privately-owned land proposed as a location for the anchorage, a cash contribution toward the first cost of construction, and provision of a public landing. The City of South Portland has notified the Division Engineer that the city is not in a position to consider cooperation at the present time. No other local agency has offered to meet the indicated requirements of local cooperation. Therefore the Division Engineer recommends no Federal improvement for navigation in Mill Cove at this time.

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U. S. ARMY ENGINEER DIVISION, NEW ENGLAND

CORPS OF ENGINEERS

424 TRAPELO ROAD

WALTHAM 54, MASS.

NEDGW

26 March 1959

SUBJECT: Survey (Review of Reports) of Portland Harbor (Mill Cove)
South Portland, Maine

TO: Chief of Engineers, Department of the Army, Washington, D.C.

AUTHORITY

1. This report is submitted in accordance with the following resolution, adopted June 2, 1955 by the Committee on Public Works of the United States Senate, which reads as follows:

"RESOLVED BY THE COMMITTEE ON PUBLIC WORKS OF THE UNITED STATES SENATE, That the Board of Engineers for Rivers and Harbors, created under Section 3 of the River and Harbor Act, approved June 13, 1902, be and is hereby, requested to review the report on Portland Harbor, Maine, contained in House Document Numbered 510, Seventy-ninth Congress, Second Session, and other reports, with a view to determining the advisability of modifying the existing project at this time, with particular reference to improving Mill Cove for navigation."

2. A review report was assigned to the New England Division on June 7, 1955 by the Chief of Engineers.

SCOPE OF STUDY

3. Preparation of this report entailed consideration of data obtained from local interests, available maps, field reconnaissance, office study of existing records, and the records of the public hearing.

DESCRIPTION OF NAVIGATION CONDITIONS

4. Mill Cove, an indentation on the south shore of Portland Harbor immediately downstream of the Portland Bridge, is approximately 100 acres in area. It is somewhat rectangular in shape having an entrance width of about 1100 feet, a width just inside the entrance of about 1600 feet and an inshore length of about 3000 feet. It is well sheltered from winds in all directions, except for the entrance which is exposed to northeast winds having a fetch of about 3000 feet across the harbor. Approximately ninety percent of the area of the cove consists of mud flats, exposed at low tide and covered at high tide.

5. There are no bridges crossing the waterway. A 30 inch oil pipeline, the top of which is 2 feet below the bottom, crosses the cove. This line lies about 200 feet inshore of the desired improvement. There is also a submarine power cable which crosses the cove very close to the entrance.

The mean range of tide is 8.9 feet. The locality is shown on U.S. Coast and Geodetic Chart No. 325 and on the map accompanying this report.

TRIBUTARY AREA

7. The immediate tributary area is the city of South Portland, Maine. However, since the cove lies entirely within the confines of Portland Harbor, it can be assumed safely that the city of Portland is not an inconsiderable part of the tributary area.

8. The city of South Portland is primarily a residential community. There are several small manufacturers, of which the principal ones are: a fish cannery, machine tool works, tank plant, small steel rolling mill, and three small boat building yards. There are also several bulk oil terminals and a large oil facility which serves as the terminus of the Portland-Montreal pipeline. The population in 1950 was 21, 866 and the city had an assessed valuation of \$18,262,025.

9. Portland is the largest city in Maine. It contains the greatest concentration of population and industrial areas in the State and is the most northerly and easterly port of importance on the Atlantic Coast. The port serves all of northern New England. The retail trade area of Portland has a population of over 250,000 in 27 nearby cities and towns, the largest of which are Biddeford, Saco, Sanford, Buxton, Kennebunk, Yarmouth, Scarborough, and Springvale. Manufacturing is Portland's principal industry, the principal articles of which are food products, cans, boots and shoes, and machine products. In 1950 the city's population was 77, 634 with an assessed valuation of \$94,987,125.

10. Both Portland and South Portland are served by the Boston and Maine Railroad, the Maine Central Railroad, the Grand Trunk Railroad (a subsidiary of the Canadian National Railway), and a connecting line, the Portland Terminal Company. There is an excellent system of local and interstate highways on which established bus and truck lines provide passenger and freight service to all parts of New England and western points. Portland also has a modern airport with regularly scheduled commercial freight and passenger traffic.

PRIOR REPORTS

11. Portland Harbor has been the subject of 20 reports since 1832. Tabulated below are the most recent reports. No study of Mill Cove has ever been authorized previous to this report.

<u>Document</u>	<u>Authority</u>	<u>Type of Report</u>	<u>Improvement Considered</u>	<u>Recommendation</u>	<u>Action</u>
H. Doc.No. 510, 79th Congress Second Session	Resolution by Committee on Public Works House of Representatives	Survey	Deepening the 30' channel to 35' from the Maine State Pier to the Boston & Maine R.R. Bridge, provision of a 35' turning basin at Vaughan Bridge and construction of 900 feet of breakwater from Spring Point to Spring Point Light.	Favorable	Auth. July 24, 1946
H. Doc. No. 560 76th Congress 3rd Session	River and Harbor Act August 26 1937	Preliminary Examination and Survey	Anchorage 35 feet deep, approximately 170 acres in area northwest of House Island.	Favorable	Auth. March 2, 1945

EXISTING CORPS OF ENGINEERS' PROJECT

12. The existing project for Portland Harbor was adopted July 4, 1836, and supplemented both by enactments from 1866 to 1946, and Harbor line revisions of June 28, 1920. It provides for an anchorage area 35 feet deep, approximately 170 acres in area northwest of House Island; an anchorage area 30 feet deep off the eastern end of the city; a channel 35 feet deep of varying width from the sea to Portland Bridge, thence 400 feet wide in Fore River to the Vaughan Bridge thence 300 feet wide to the Boston and Maine Railroad Bridge; a turning basin 35 feet wide easterly of the Vaughan Bridge; a channel 300 feet wide 30 feet deep from the 30 foot anchorage to the Grand Trunk Railroad Bridge; a channel 14 feet deep between the Grand Trunk Railroad and Turkey Bridges; a channel 12 feet deep and 300 feet wide from Turkey bridge to the head of Back Cove; the removal of two obstructing ledges in the main ship channel to a depth of 40 feet; a stone breakwater about 2,000 feet long on the southerly side of the mouth of the inner harbor; a stone breakwater about 900 feet long from Spring Point to Spring Point Light; and the maintenance of Soldier Ledge channel in Hussey Sound to a depth of 40 feet.

13. Mill Cove has never been included in the existing project. Approximately 75 percent of the area of the desired anchorage lies inshore of the Pierhead and Bulkhead line, established by Public Law of 1920 and is privately owned.

14. Costs under the existing project to 30 June 1958 were \$5,439,970 of which \$4,284,212 was for new work and \$1,155,758 for maintenance. The existing project is complete. A House Committee on Public Works resolution dated August 20, 1957 authorized a review study to determine the need for deepening the main channel to 45 feet.

LOCAL COOPERATION ON EXISTING AND PRIOR PROJECTS

15. The provisions of the River and Harbor Act of August 8, 1917, as set forth in House Document No. 71, Sixty Fifth Congress required assurance that adequate terminal facilities with berthing depth of 35 feet would be provided for deep-draft vessels. At a cost of \$1,750,000 the State of Maine constructed a pier 1,000 feet long and 328 feet wide with depth of 35 feet along the easterly side. Construction of this pier is the only measure of local cooperation thus far required for Portland Harbor.

OTHER IMPROVEMENTS

16. No known navigation improvements in Mill Cove have been made by either local government or private interests.

TERMINAL AND TRANSFER FACILITIES

17. There are no terminal or transfer facilities in the Cove.

IMPROVEMENT DESIRED

18. In order to determine the nature and extent of improvements desired, a public hearing was held at South Portland City Hall on September 26, 1956. The meeting was well attended and included representatives of local government, various business interests, community organizations, commercial fishermen, owners of land abutting the cove, and private citizens. The desired improvement was detailed on a plan submitted at the hearing and consisted of dredging a mooring basin approximately 1400 feet by 1250 feet to a depth of 10 feet. Further expression of local interest, at the hearing and subsequently, modified the depth desired to a range of 6 to 8 feet below mean low water.

19. Proponents of the improvement stated that present anchorage for recreational craft in the vicinity of South Portland is entirely inadequate. Overcrowding and exposure to easterly storms have resulted in serious damage to boats, which could have been avoided if

there were additional protected anchorage. The fact that some boat owners in the vicinity, rather than expose their boats to the present hazardous conditions, moor in distant location, forcing them to travel considerable distances for access to the boats was also cited. Under such conditions, it was claimed, any expansion of the existing recreational fleet is unlikely. The lack of anchorage for transient boats was also advanced as a reason for acquiring additional anchorage. It was pointed out that many of the numerous boats cruising along the coast cannot enter the harbor and be assured of anchorage for the purpose of procuring supplies or boat servicing. A local boat yard owner stated that the anchorage outside his marine railway is so overcrowded that it does not allow for proper operation of his facility.

20. Commercial fishing advocates of the improvement stated that 300 to 350 lobster boats presently utilize the facilities of Portland Harbor. These boats have no anchorage facilities and are forced, when landing their catch or procuring supplies or service, to moor alongside larger fishing craft, which often results in damage. In lieu of mooring this way, they are forced to seek anchorage at distant points where great difficulty is experienced in the procurement of supplies or service. It was stated that additional anchorage in the harbor would alleviate this condition and allow for an increase in the number of boats engaged in this type of fishing.

21 The use of the area as a harbor of refuge was also cited. Proponents of improvement claimed that sudden storms in Casco Bay and along the coast adjacent to Portland Harbor, cause many recreational and fishing craft to seek refuge in Portland Harbor. This type of craft experiences difficulty in securing dock or mooring space due to the crowded conditions in the harbor. It was claimed that the provision of mooring area would be beneficial in the remedying of this condition.

23. Abutting land owners objected to any change in the present status of that part of the cove which lies between the pipeline and the shore. Objection was also raised to the provision of any facility that would tend to cause noise. A representative of the pipeline corporation asked assurance that any dredging undertaken be sufficiently far from the pipeline to safeguard it from damage.

EXISTING AND PROSPECTIVE COMMERCE

24. There is no commerce in the cove. The main harbor of Portland in 1955 received 38,649 tons of fish and fish products, with 371 tons of shellfish. A large proportion of this commerce is carried in boats drawing less than 8 feet. No indication of any prospective commerce for Mill Cove has been made by local interests.

VESSEL TRAFFIC

25. Boating and vessel traffic is practically non-existent in the cove. A few local people have small power boats which are kept in the cove. These boats can be used only at high tide.

DIFFICULTIES ATTENDING NAVIGATION

26. Since the cove consists of mud flats which, for practically the entire area, are bare at low tide no navigation except at high water is possible. Depths range from one half foot, to two feet in the area between the entrance of the cove and the top of slope of the adjacent 35-foot dredged channel in Portland Harbor.

WATER POWER AND OTHER SPECIAL SUBJECTS

27. The waterway is tidal. Matters involving water power, flood control, pollution or related subjects are not pertinent to this investigation. The considered work would have no effect on shellfish or wildlife.

PLANS OF IMPROVEMENT

28. The improvement desired by local interests has been considered in this report. Essentially this consists of dredging an anchorage 40 acres in area and 8 feet deep together with an entrance channel of the same depth 1000 feet long and 100 feet wide. In consideration of the type and amount of boating for which the improvement was desired, an alternate plan of improvement was considered. The alternate improvement would provide for a smaller anchorage approximately 10 acres in area and 6 feet deep. In all other respects this improvement would be the same as that desired by local interests.

29. The alternate improvement was studied in consideration of the prospective use of the harbor. Local interests reported that a fleet of 65 recreational boats would use the cove in the event of improvement. The make-up of this fleet was detailed as 25 outboards, 15 small sail, 10 new cruisers, and 15 transfers of locally-owned boats that now base elsewhere. It was considered also that normal growth of the recreational fleet would add 33 new boats during the anticipated life of the project. In addition to the recreational fleet it was estimated that a portion of the lobster fleet, that now land their catch in Portland Harbor would utilize the cove for short periods of time while procuring supplies. The maximum number of boats in this category would be 30.

30. In consideration of these factors it is estimated that the maximum number of boats using the cove at any specific time would be 128 boats. These boats could be accommodated in a ten acre anchorage by use of specialized methods of mooring, such as floats, piles, or fore and aft moorings.

31. A depth of 6 feet was selected for the alternate anchorage in consideration of the draft of the boats expected to use it. The lobster boats draw 3 to 4 feet loaded and the largest cruiser would draw no more than 4 feet. The entrance channel in the alternate improvement would have a width of 75 feet which is considered ample for the amount of anticipated traffic.

ESTIMATES OF FIRST COSTS

32. Estimates of first costs for the desired and alternate improvements have been made. The desired improvement consists of a 40-acre anchorage and entrance channel, both 8 feet deep. The alternate improvement consists of a 10-acre anchorage and entrance channel, both 6 feet deep. Estimated costs are based on current prices with allowances for contingencies, engineering, pre-authorization studies, supervision and administration.

33. The first costs for both improvements are shown for comparative purposes only. Since it was found early in the study that construction of a 40-acre anchorage, as desired by local interests, was not justifiable for the existing and prospective boating in the locality, no estimates of annual charges were made for this improvement.

PROJECT CONSTRUCTION

34. DESIRED IMPROVEMENT

<u>Anchorage, 40 acres in area, 8 feet deep</u>	
800,000 cubic yards of mud, sand, and gravel @ \$1.32	\$1,060,000*
<u>Channel, 1000' x 100' x 8'</u>	
30,000 cubic yards of mud, sand, and gravel @ \$1.32	40,000*
	<u>\$1,100,000*</u>
Engineering and Design	15,000
Supervision and Administration	85,000
	<u>\$1,200,000</u>
Pre-Authorization Studies	3,000
Aids to Navigation	1,000
Alteration of Cables	9,000
Total Cost	<u>\$1,213,000</u>

*Includes contingencies

35. ALTERNATE IMPROVEMENT

Anchorage, 10 acres in area, 6 feet deep

150,000 cubic yards of mud, sand, and
gravel @ \$1.60

\$240,000*

Entrance Channel, 1000'x 75'x 6'

16,000 cubic yards of mud, sand, and
gravel @ \$1.60

25,000*

265,000*

Engineering & Design

10,000

Supervision & Administration

25,000

300,000

Pre-Authorization Studies

3,000

Aids to Navigation

1,000

Alteration of Cable

9,000

Total Project Cost

\$313,000

* Includes Contingencies

ESTIMATES OF BENEFITS

36. Benefits to be derived from improvement of Mill Cove would be both general and recreational in nature. The general benefits would accrue to some of the 300 to 350 lobster fishing boats who reportedly land their catch at Portland Harbor. The recreational benefits would be derived from establishment of a new recreational fleet and the transfer of locally owned boats from other harbors.

37. While transient recreational boating was advanced as a reason for improvement of the cove, no benefits have been computed from this source. It has been determined that transient recreational craft on cruise in Maine waters have the more popular resort areas as a final destination and usually bypass such commercial harbors as Portland.

38. There is no lobster fishing fleet now basing in the vicinity of Mill Cove. The majority of the lobster fleet, landing its catch at Portland Harbor, base in nearby harbors in Saco and Casco Bays. It is not considered that any part of this fleet would transfer to Mill Cove in the event of improvement. This consideration is based on such factors as availability of the fishing grounds to the individual bases, proximity of the boat owners' homes to their present bases and sheltered anchorage at their present bases. No indication of any such transfers was received either at the hearing or subsequent to it. Therefore no benefits are anticipated from this source.

39. At the present time lobster boats landing their catch in Portland Harbor have to tie alongside the wharves or larger boats to land their catch. This is general practice and ordinarily accomplished without damage. However, at various times boat owners have to leave their boats unattended for periods of time for the purpose of procuring supplies or service. During such unattended periods the boats have become damaged by wave action from passing boats or from sudden squalls. The damage results from bumping and scraping during these periods. Proponents of improvement claim that provision of additional mooring space would allow the boats to moor in a safe mooring area and would eliminate such damage, resulting in considerable savings. This claim appears to be reasonable. It is estimated that approximately 10 percent of the lobster fishing fleet incurs damage in this manner that would be eliminated by the improvement of Mill Cove. At an estimated average of \$50 per boat annually, the benefit to be derived from this source amounts to 30 X 50 or \$1500 annually, a general benefit.

40. Local fishing interests advocated the provision of sheltered safe anchorage for the fishing fleets that utilize Portland Harbor. No indication of any new boats basing in the cove was made by either the fishing interests or other local interests. Therefore, no benefits are expected from the purchase of new fishing boats because of the improvement.

41. The claim of local interests that 65 recreational boats will locate in the cove immediately after improvement, appears to be reasonable. Of this fleet 15 would be transfers and the remainder new boats. Details of the new boats and the benefits to be derived from improvement are shown in Table No. 1 on Page 10.

42. The boats based elsewhere are considered to be receiving 80 percent of the net annual for hire return that would be received if ideal harbor conditions were available near South Portland. If these boats are transferred to Mill Cove it is considered that they will benefit by an amount equal to the difference between the ideal return and the return now received. Details of the benefits are shown in Table No. 2 on Page 10.

TABLE 1

BENEFITS TO PLEASURE BOATING

NEW RECREATIONAL CRAFT

10

TYPE OF CRAFT	LENGTH (feet)	No. of BOATS	DEPRECIATED VALUE		PERCENT RETURN				VALUE \$	ON CRUISE		
			AVERAGE \$	TOTAL \$	IDEAL	% of IDEAL Pres.	Future	GAIN		AVG. DAYS	% OF SEASON	VALUE \$
RECREATIONAL FLEET												
Outboards	10-20	25	1,000	25,000	13	0	100	13	3,250	-	-	-
Cruisers	15-30	5	2,700	13,500	9	0	100	9	1,215	10	10	121
	31-50	5	4,000	20,000	9	0	100	9	1,800	10	10	180
Sailboats	10-20	15	500	7,500	10	0	100	10	750	-	-	-
TOTALS		50		66,000					7,015			301

$$\$7,015 - \$301 = \$6,714$$

TABLE 2
BENEFITS TO PLEASURE BOATING
TRANSFERRED RECREATIONAL BOATS

Cruisers	15-30	5	2,500	12,500	9	80	100	1.8	225	5	5	12
	31-50	5	3,500	17,500	9	80	100	1.8	315	10	10	23
Aux. Sail	15-30	<u>5</u>	3,500	<u>17,500</u>	9	80	100	1.8	<u>315</u>	5	5	<u>16</u>
TOTALS		15		47,500					855			51

$$\$855 - \$51 = \$804$$

43. During the anticipated 50-year life of the project the fleet would increase in number. Based on population trends alone the increase for the area would approximate 15 percent. However yachting interests in their forecasts have indicated a current national annual average of about 6 percent. In view of these two factors and in consideration of the locale of the desired improvement, which is not a resort area, it is estimated that the recreational fleet would increase in number by about 50 percent over the life of the project. Therefore the reasonably prospective normal growth is about 33 boats. The benefit to these boats averaged over the project life has been evaluated as \$1,900, or 25 percent of the benefits derived by the 65 boats which will occupy the anchorage immediately after improvement.

44. In the event of improvement local interests requested that the spoil be utilized for fill in the adjacent cove westward of Mill Cove. The fill would be used to create new land for development purposes. It is estimated that fill from the 10-acre anchorage would create about 10 acres of new land. In this location land values are appraised at about \$5,000 per acre. The present value of the land which is below mean high water is about \$100 per acre. Therefore the net increase in value of the land would be \$4,900 per acre. It is estimated that 600 linear feet of dike will be required to retain the fill. Cost of the retaining dike has been estimated @ \$25,000. The annual benefit therefore would be \$49,000 - \$25,000 or \$24,000 multiplied by the current local mortgage rate of 5 percent or \$1,200.

45. The reasonably prospective benefits resulting from the considered alternate improvement of Mill Cove are summarized below. The desired improvement would result in larger land enhancement benefits in proportion to the increased land area improved.

<u>Benefit</u>	<u>General</u>	<u>Local</u>	<u>Total</u>
Elimination of Fishing Boat Damage	\$1,500	\$0	\$1,500
New Recreational Boats	3,350	3,350	6,700
Transferred Recreational Boats	400	400	800
Normal Recreational Fleet Growth	950	950	1,900
Land Enhancement (10 Acres)	600	600	1,200
TOTALS	\$6,800	\$5,300	\$12,100
Percent of Total	56%	44%	100%

APPORTIONMENT OF COSTS AMONG INTERESTS

46. Costs of initial construction of the alternate improvement has been apportioned between Federal and local interests to a degree commensurate with the amounts of local and general benefits to be derived. Computation of benefits show 56 percent general and 44 percent local benefits. The costs apportioned include dredging of the basin and entrance channel.

The cost of altering a cable across the entrance is included as a local cost to be borne entirely by local interests. Land acquisition, public landing, easements, and rights of way are considered to be entirely self-liquidating local costs and are not included in the apportionment. The apportionment of costs is computed below:

First Costs

Federal

Construction of 10-acre anchorage and entrance channel	\$300,000
Pre-authorization Study	3,000
Navigation Aids	1,000
	<u>\$304,000</u>

Non-Federal

Alteration of Cables	9,000
Total Project Cost	<u>\$313,000</u>

Apportionment of First Costs

Federal

Corps of Engineers (\$300,000)(0.56)	\$168,000
Pre-authorization Study Costs	3,000
U.S. Coast Guard	1,000
Subtotal (March 1959)	<u>\$172,000</u>

Non-Federal

Cash Contribution by Local Interests (\$300,000)(0.44)	\$132,000
Altering Cables	9,000
Subtotal (March 1959)	<u>\$141,000</u>

TOTAL PROJECT COSTS (March 1959)	<u>\$331,000</u>
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ESTIMATES OF ANNUAL CHARGES

47. The estimated annual charges are based on an anticipated 50-year project life with interest rates of 2.5 percent. The annual charges are based on the apportionment described in the preceding paragraph. Annual maintenance costs have been included as a Federal annual charge.

Federal Annual Charges

Interest (.025)(\$179,000)	\$4,475
Amortization (.01026)(179,000)	1,835
Aids to Navigation	100
Annual Maintenance	2,000
	<u>\$8,410</u>

Non-Federal Annual Charges

Interest (0.25)(\$141,000)	\$3,525
Amortization (.01026)(141,000)	1,425
	<u>\$4,950</u>
Total Annual Charges	\$13,360

COMPARISON OF BENEFITS TO COSTS

48. The estimated annual benefits and annual costs for the alternate 10-acre anchorage and entrance channel have been compared resulting in the following benefit-cost ratio.

Estimated Annual Benefits	\$12,100
Estimated Annual Costs	13,360
Ratio of Benefits to Costs	0.9

PROPOSED LOCAL COOPERATION

49. The benefits to be derived from any improvement of Mill Cove would be partly general and partly local in nature. In the event of improvement local interests should be required to share proportionally in total project costs. The local share of costs should bear the same ratio as the general benefits bear to local benefits. The apportionment of costs, based on the percentage of local benefits requires that local interests make a cash contribution of 44 percent of the first cost of improvement. Computation of this amount shows a required cash contribution of \$132,000.

50. Local interests should also be required to: a. Provide without costs all lands, easements, and rights-of-way necessary for construction and maintenance of the project when and as required.

b. Hold and save the United States free from property damages that may result from construction and maintenance of the project.

c. Provide and maintain without cost to the United States necessary mooring facilities and utilities, including a public landing with suitable supply facilities open to all on equal terms.

d. Provide without cost to the United States suitable spoil disposal areas, with suitable bulkheads or dikes to retain that portion of fill below mean high water.

e. Agree to regulate the growth, use and free development of the anchorage facilities, with the understanding that said facilities will be open to all on equal terms.

f. Make the utility and other relocations or alterations as required for project purposes.

COORDINATION WITH OTHER AGENCIES

51. All Federal, State and local agencies known to have an interest in the development and use of Mill Cove were notified of the public hearing on the proposed improvement held at South Portland, Maine on September 26, 1956. Officials of the City of South Portland and representatives of local boating interests attended the hearing. Subsequent discussions were held with officials of the City of South Portland. Estimates of costs of required aids to navigation were furnished by the U.S. Coast Guard.

SHORE LINE CHANGES

52. The desired improvement, located in the inner harbor and subject to very little wave action or tidal current, would have no effect on the present configuration of the shore line.

DISCUSSION

53. Mill Cove, a rectangular shaped indentation of about 100 acres in area, lies on the south shore of Portland Harbor, Maine immediately downstream of the Portland Bridge. It is well sheltered from winds in all directions, except for those from the northeast. In this direction winds have an unimpeded fetch of about 3,000 feet across Portland Harbor. The greater part of the area of the cove consists of mud flats, which are exposed at low and covered at high tide.

54. The area tributary to the cove consists of the cities of Portland and South Portland whose combined population in 1950 was 99,500 with assessed valuations totaling \$113,249,150. The city of Portland contains the largest concentration of industrial areas and population in the entire State of Maine, while South Portland is chiefly residential. Portland Harbor is one of the main fishing harbors in the state. Its receipts of fish and fish products in 1956 amounted to about 39,000 tons, which were processed by several fish processing plants in Portland. The area is served by the Boston and Maine, the Maine Central, and the Grand Trunk railroads, and also has an excellent system of highways connecting to southern and western points.

55. Local interests desire an anchorage and mooring area of about 40 acres, claiming that present anchorage in the vicinity is entirely inadequate for the present recreational fleet, unsheltered in periods of easterly storms, and acts as a deterrent to future expansion of boating in the area. It was also claimed that the desired anchorage would be of considerable value to transient boats providing them with a location where boat servicing and supplies might be obtained more easily than is now possible and further providing a harbor of refuge

in the event of sudden squalls or storm periods. Commercial fishing interests, chiefly lobster fishing, advocated additional anchorage for the purpose of procurement of boat servicing or supplies, stating that such services are now obtainable only at great inconvenience or at hazardous operation.

56. First cost of the desired 40-acre anchorage was found to be relatively high in comparison with costs of similar small boat anchorages in the vicinity. The high costs would be incurred by the large amount of material to be removed as the greater portion of the area is at an elevation of about 3 feet above mean low water. It was found that insufficient annual benefits could be derived from the sources described in the preceding paragraphs to economically justify a project of this magnitude. Therefore an alternate improvement, that would reasonably be expected to accomodate the prospective fleet, was studied. No further consideration was made of the desired anchorage. The alternate improvement considered a 10-acre anchorage with a 75-foot wide entrance channel, both deepened to 6 feet. The alternate plan would provide for the recreational fleet expected to use the harbor immediately after improvement and any additions thereto that may reasonably be expected during the anticipated life of the project.

57. Total project cost for the alternate plan was estimated at \$313,000, exclusive of self-liquidating costs of a public landing and land acquisition to be borne by local interests. Total annual charges were computed at \$13,360.

58. Benefits to be derived from provision of anchorage would be chiefly recreational. Local interests reported that a fleet of 65 recreational craft would utilize the anchorage immediately after improvement. This fleet would be augmented by lobster fishing craft that would moor in the anchorage intermittently for short periods of time in lieu of docking at piers or alongside other larger craft. Of the 300 to 350 lobster boats landing their catch at Portland Harbor it is estimated that the maximum number of them seeking mooring at any specific time would be 30. Thus the total number of boats using the anchorage would be 95 immediately after improvement. It was also estimated that 33 boats would be added to the fleet due to such causes as normal growth, increase in population and the recent spurt in the growth of recreational boating. The total computed benefits, including recreational, land enhancement, and elimination of damage to lobster fishing boats, amount to \$12,100. The annual charges are estimated to be \$13,360. Comparison of the annual benefits to the annual charges results in a benefit-cost ratio of 0.9.

59. It became evident early in the study that the project was primarily recreational and that a substantial cash contribution plus acquisition of the privately owned lands would be required of local interests. Therefore, inquiry was made of the city of South Portland concerning its attitude toward these aspects of local cooperation. At the request of the municipal government the details of such cooperation were explained at an open council meeting held on March 17, 1958. By letter, dated May 9, 1958 the City Manager notified the Division Engineer that the city of South Portland was not in a position to consider navigational improvements at this time. No other agency offered to meet the indicated requirements of local cooperation.

CONCLUSION

60. The Division Engineer concludes that although protected small boat anchorage may be insufficient for the existing recreational and lobster fishing fleets in the vicinity of Mill Cove, Portland Harbor, Maine, the benefits to be derived, by provision of the desired improvement or a smaller 10-acre, 6-foot deep anchorage in Mill Cove for the existing and prospective combined fleets, are inadequate to justify economically the relatively high costs that would be involved in construction of the improvement. He further believes that local public interest in the project is insufficient to furnish the indicated requirements of local cooperation for a project of this type.

RECOMMENDATION

61. In view of the foregoing, the Division Engineer recommends no Federal improvement of navigation in Mill Cove, Portland Harbor, at this time.

Incl
Map

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